



# Product Specification

XBLW SN74HC11

Triple 3-input And Gate

WEB | [www.xinboleic.com](http://www.xinboleic.com)



## Description

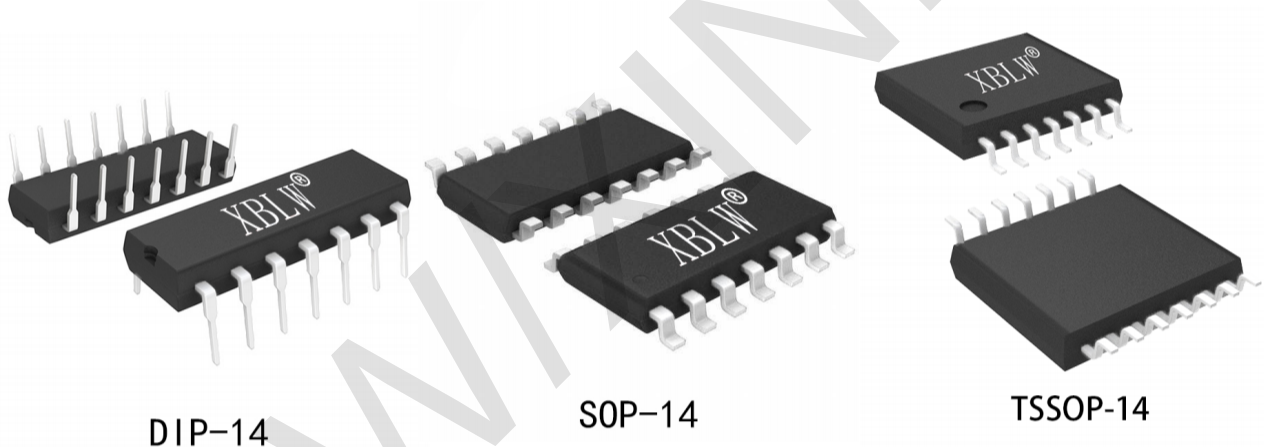
The SN74HC11 is a triple 3-input AND gate. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of  $V_{CC}$ .

## Features

- Buffered inputs
- Wide operating voltage range: 2 V to 6 V
- Specified from  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Packaging information: DIP-14/SOP-14/TSSOP-14

## Applications

- Combining power good signals
- Enable digital signals



## Ordering Information

| Product Model     | Package Type | Marking | Packing | Packing Qty  |
|-------------------|--------------|---------|---------|--------------|
| XBLW SN74HC11N    | DIP-14       | 74HC11N | Tube    | 1000Pcs/Box  |
| XBLW SN74HC11DTR  | SOP-14       | 74HC11  | Tape    | 2500Pcs/Reel |
| XBLW SN74HC11TDTR | TSSOP-14     | 74HC11  | Tape    | 3000Pcs/Reel |

## Block Diagram

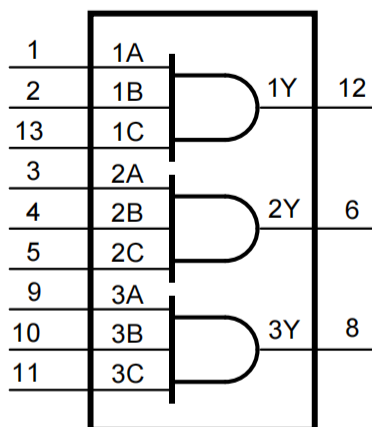


Figure 1. Logic symbol

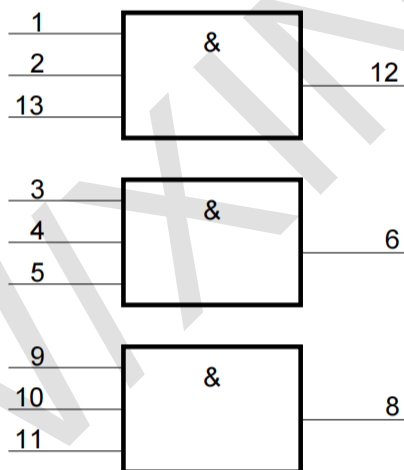


Figure 2. IEC logic symbol

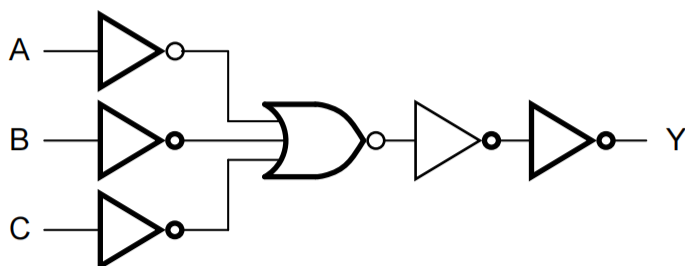
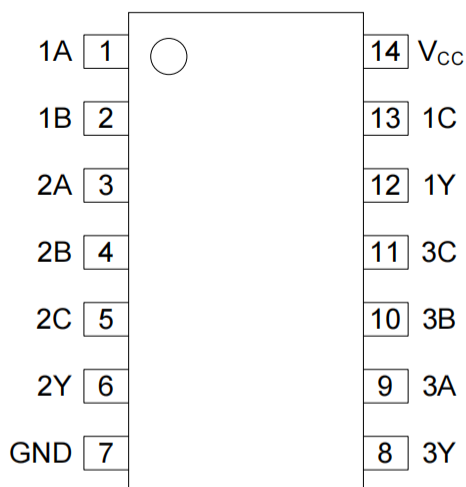


Figure 3. Logic diagram for one gate

## Pin Configurations



## Pin Description

| Pin No. | Pin Name        | Description    |
|---------|-----------------|----------------|
| 1       | 1A              | data input     |
| 2       | 1B              | data input     |
| 3       | 2A              | data input     |
| 4       | 2B              | data input     |
| 5       | 2C              | data input     |
| 6       | 2Y              | data output    |
| 7       | GND             | ground (0V)    |
| 8       | 3Y              | data output    |
| 9       | 3A              | data input     |
| 10      | 3B              | data input     |
| 11      | 3C              | data input     |
| 12      | 1Y              | data output    |
| 13      | 1C              | data input     |
| 14      | V <sub>CC</sub> | supply voltage |

## Function Table

| Input |    |    | Output |
|-------|----|----|--------|
| nA    | nB | nC | nY     |
| L     | X  | X  | L      |
| X     | L  | X  | L      |
| X     | X  | L  | L      |
| H     | H  | H  | H      |

Note: H=HIGH voltage level; L=LOW voltage level; X=don't care.

## Electrical Parameter

### Absolute Maximum Ratings

(Voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter               | Symbol           | Conditions                                                     |           | Min. | Max. | Unit |
|-------------------------|------------------|----------------------------------------------------------------|-----------|------|------|------|
| supply voltage          | V <sub>CC</sub>  | -                                                              |           | -0.5 | +7   | V    |
| input clamping current  | I <sub>IK</sub>  | V <sub>I</sub> <-0.5V or V <sub>I</sub> >V <sub>CC</sub> +0.5V |           | -    | ±20  | mA   |
| output clamping current | I <sub>OK</sub>  | V <sub>O</sub> <-0.5V or V <sub>O</sub> >V <sub>CC</sub> +0.5V |           | -    | ±20  | mA   |
| output current          | I <sub>O</sub>   | -0.5V<V <sub>O</sub> <V <sub>CC</sub> +0.5V                    |           | -    | ±25  | mA   |
| supply current          | I <sub>CC</sub>  | -                                                              |           | -    | 50   | mA   |
| ground current          | I <sub>GND</sub> | -                                                              |           | -50  | -    | mA   |
| total power dissipation | P <sub>tot</sub> | -                                                              |           | -    | 500  | mW   |
| storage temperature     | T <sub>stg</sub> | -                                                              |           | -65  | +150 | °C   |
| soldering temperature   | T <sub>L</sub>   | 10s                                                            | DIP       | 245  |      | °C   |
|                         |                  |                                                                | SOP/TSSOP | 260  |      |      |

### Recommended Operating Conditions

| Parameter                           | Symbol                | Conditions      | Min. | Typ. | Max.     | Unit |
|-------------------------------------|-----------------------|-----------------|------|------|----------|------|
| supply voltage                      | $V_{CC}$              | -               | 2.0  | 5.0  | 6.0      | V    |
| input voltage                       | $V_I$                 | -               | 0    | -    | $V_{CC}$ | V    |
| output voltage                      | $V_O$                 | -               | 0    | -    | $V_{CC}$ | V    |
| input transition rise and fall rate | $\Delta t / \Delta V$ | $V_{CC} = 2.0V$ | -    | -    | 625      | ns/V |
|                                     |                       | $V_{CC} = 4.5V$ | -    | 1.67 | 139      | ns/V |
|                                     |                       | $V_{CC} = 6.0V$ | -    | -    | 83       | ns/V |
| ambient temperature                 | $T_{amb}$             | -               | -40  | -    | +125     | °C   |

## Electrical Characteristics

### DC Characteristics 1

( $T_{amb}=25^{\circ}\text{C}$ , voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter                 | Symbol          | Conditions                                                                         |                                               | Min. | Typ. | Max. | Unit |
|---------------------------|-----------------|------------------------------------------------------------------------------------|-----------------------------------------------|------|------|------|------|
| HIGH-level input voltage  | V <sub>IH</sub> | V <sub>CC</sub> =2.0V                                                              |                                               | 1.5  | 1.2  | -    | V    |
|                           |                 | V <sub>CC</sub> =4.5V                                                              |                                               | 3.15 | 2.4  | -    | V    |
|                           |                 | V <sub>CC</sub> =6.0V                                                              |                                               | 4.2  | 3.2  | -    | V    |
| LOW-level input voltage   | V <sub>IL</sub> | V <sub>CC</sub> =2.0V                                                              |                                               | -    | 0.8  | 0.5  | V    |
|                           |                 | V <sub>CC</sub> =4.5V                                                              |                                               | -    | 2.1  | 1.35 | V    |
|                           |                 | V <sub>CC</sub> =6.0V                                                              |                                               | -    | 2.8  | 1.8  | V    |
| HIGH-level output voltage | V <sub>OH</sub> | V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub>                                 | I <sub>O</sub> =-20uA; V <sub>CC</sub> =2.0V  | 1.9  | 2.0  | -    | V    |
|                           |                 |                                                                                    | I <sub>O</sub> =-20uA; V <sub>CC</sub> =4.5V  | 4.4  | 4.5  | -    | V    |
|                           |                 |                                                                                    | I <sub>O</sub> =-20uA; V <sub>CC</sub> =6.0V  | 5.9  | 6.0  | -    | V    |
|                           |                 |                                                                                    | I <sub>O</sub> =-4.0mA; V <sub>CC</sub> =4.5V | 3.98 | 4.32 | -    | V    |
|                           |                 |                                                                                    | I <sub>O</sub> =-5.2mA; V <sub>CC</sub> =6.0V | 5.48 | 5.81 | -    | V    |
| LOW-level output voltage  | V <sub>OL</sub> | V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub>                                 | I <sub>O</sub> =20uA; V <sub>CC</sub> =2.0V   | -    | 0    | 0.1  | V    |
|                           |                 |                                                                                    | I <sub>O</sub> =20uA; V <sub>CC</sub> =4.5V   | -    | 0    | 0.1  | V    |
|                           |                 |                                                                                    | I <sub>O</sub> =20uA; V <sub>CC</sub> =6.0V   | -    | 0    | 0.1  | V    |
|                           |                 |                                                                                    | I <sub>O</sub> =4.0mA; V <sub>CC</sub> =4.5V  | -    | 0.15 | 0.26 | V    |
|                           |                 |                                                                                    | I <sub>O</sub> =5.2mA; V <sub>CC</sub> =6.0V  | -    | 0.16 | 0.26 | V    |
| input leakage current     | I <sub>I</sub>  | V <sub>I</sub> = V <sub>CC</sub> or GND; V <sub>CC</sub> =6.0V                     |                                               | -    | -    | ± 1  | uA   |
| supply current            | I <sub>CC</sub> | V <sub>I</sub> = V <sub>CC</sub> or GND; I <sub>O</sub> =0A; V <sub>CC</sub> =6.0V |                                               | -    | -    | 2.0  | uA   |
| input capacitance         | C <sub>I</sub>  | -                                                                                  |                                               | -    | 3.5  | -    | pF   |

## DC Characteristics 2

( $T_{amb} = -40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ , voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter                 | Symbol          | Conditions                                                                        |                                               | Min. | Typ. | Max. | Unit |
|---------------------------|-----------------|-----------------------------------------------------------------------------------|-----------------------------------------------|------|------|------|------|
| HIGH-level input voltage  | V <sub>IH</sub> | V <sub>CC</sub> =2.0V                                                             |                                               | 1.5  | -    | -    | V    |
|                           |                 | V <sub>CC</sub> =4.5V                                                             |                                               | 3.15 | -    | -    | V    |
|                           |                 | V <sub>CC</sub> =6.0V                                                             |                                               | 4.2  | -    | -    | V    |
| LOW-level input voltage   | V <sub>IL</sub> | V <sub>CC</sub> =2.0V                                                             |                                               | -    | -    | 0.5  | V    |
|                           |                 | V <sub>CC</sub> =4.5V                                                             |                                               | -    | -    | 1.35 | V    |
|                           |                 | V <sub>CC</sub> =6.0V                                                             |                                               | -    | -    | 1.8  | V    |
| HIGH-level output voltage | V <sub>OH</sub> | V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub>                                | I <sub>O</sub> =-20uA; V <sub>CC</sub> =2.0V  | 1.9  | -    | -    | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =-20uA; V <sub>CC</sub> =4.5V  | 4.4  | -    | -    | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =-20uA; V <sub>CC</sub> =6.0V  | 5.9  | -    | -    | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =-4.0mA; V <sub>CC</sub> =4.5V | 3.84 | -    | -    | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =-5.2mA; V <sub>CC</sub> =6.0V | 5.34 | -    | -    | V    |
| LOW-level output voltage  | V <sub>OL</sub> | V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub>                                | I <sub>O</sub> =20uA; V <sub>CC</sub> =2.0V   | -    | -    | 0.1  | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =20uA; V <sub>CC</sub> =4.5V   | -    | -    | 0.1  | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =20uA; V <sub>CC</sub> =6.0V   | -    | -    | 0.1  | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =4.0mA; V <sub>CC</sub> =4.5V  | -    | -    | 0.33 | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =5.2mA; V <sub>CC</sub> =6.0V  | -    | -    | 0.33 | V    |
| input leakage current     | I <sub>I</sub>  | V <sub>I</sub> =V <sub>CC</sub> or GND; V <sub>CC</sub> =6.0V                     |                                               | -    | -    | ± 1  | uA   |
| supply current            | I <sub>CC</sub> | V <sub>I</sub> =V <sub>CC</sub> or GND; I <sub>O</sub> =0A; V <sub>CC</sub> =6.0V |                                               | -    | -    | 20   | uA   |

### DC Characteristics 3

( $T_{amb} = -40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ , voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter                 | Symbol          | Conditions                                                                        |                                               | Min. | Typ. | Max. | Unit |
|---------------------------|-----------------|-----------------------------------------------------------------------------------|-----------------------------------------------|------|------|------|------|
| HIGH-level input voltage  | V <sub>IH</sub> | V <sub>CC</sub> =2.0V                                                             |                                               | 1.5  | -    | -    | V    |
|                           |                 | V <sub>CC</sub> =4.5V                                                             |                                               | 3.15 | -    | -    | V    |
|                           |                 | V <sub>CC</sub> =6.0V                                                             |                                               | 4.2  | -    | -    | V    |
| LOW-level input voltage   | V <sub>IL</sub> | V <sub>CC</sub> =2.0V                                                             |                                               | -    | -    | 0.5  | V    |
|                           |                 | V <sub>CC</sub> =4.5V                                                             |                                               | -    | -    | 1.35 | V    |
|                           |                 | V <sub>CC</sub> =6.0V                                                             |                                               | -    | -    | 1.8  | V    |
| HIGH-level output voltage | V <sub>OH</sub> | V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub>                                | I <sub>O</sub> =-20uA; V <sub>CC</sub> =2.0V  | 1.9  | -    | -    | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =-20uA; V <sub>CC</sub> =4.5V  | 4.4  | -    | -    | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =-20uA; V <sub>CC</sub> =6.0V  | 5.9  | -    | -    | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =-4.0mA; V <sub>CC</sub> =4.5V | 3.7  | -    | -    | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =-5.2mA; V <sub>CC</sub> =6.0V | 5.2  | -    | -    | V    |
| LOW-level output voltage  | V <sub>OL</sub> | V <sub>I</sub> =V <sub>IH</sub> or V <sub>IL</sub>                                | I <sub>O</sub> =20uA; V <sub>CC</sub> =2.0V   | -    | -    | 0.1  | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =20uA; V <sub>CC</sub> =4.5V   | -    | -    | 0.1  | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =20uA; V <sub>CC</sub> =6.0V   | -    | -    | 0.1  | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =4.0mA; V <sub>CC</sub> =4.5V  | -    | -    | 0.4  | V    |
|                           |                 |                                                                                   | I <sub>O</sub> =5.2mA; V <sub>CC</sub> =6.0V  | -    | -    | 0.4  | V    |
| input leakage current     | I <sub>I</sub>  | V <sub>I</sub> =V <sub>CC</sub> or GND; V <sub>CC</sub> =6.0V                     |                                               | -    | -    | ± 1  | uA   |
| supply current            | I <sub>CC</sub> | V <sub>I</sub> =V <sub>CC</sub> or GND; I <sub>O</sub> =0A; V <sub>CC</sub> =6.0V |                                               | -    | -    | 40   | uA   |

#### AC Characteristics 1

( $T_{amb}=25^{\circ}\text{C}$ , voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter                                | Symbol   | Conditions                                                   | Min.                                  | Typ. | Max. | Unit   |
|------------------------------------------|----------|--------------------------------------------------------------|---------------------------------------|------|------|--------|
| nA, nB, nC to nY<br>propagation<br>delay | $t_{pd}$ | see Figure 5 <sup>[1]</sup>                                  | $V_{CC}=2.0\text{V}$                  | -    | 32   | 100 ns |
|                                          |          |                                                              | $V_{CC}=4.5\text{V}$                  | -    | 12   | 20 ns  |
|                                          |          |                                                              | $V_{CC}=5.0\text{V}; C_L=15\text{pF}$ | -    | 9    | - ns   |
|                                          |          |                                                              | $V_{CC}=6.0\text{V}$                  | -    | 10   | 17 ns  |
| transition time                          | $t_t$    | see Figure 5 <sup>[2]</sup>                                  | $V_{CC}=2.0\text{V}$                  | -    | 19   | 75 ns  |
|                                          |          |                                                              | $V_{CC}=4.5\text{V}$                  | -    | 7    | 15 ns  |
|                                          |          |                                                              | $V_{CC}=6.0\text{V}$                  | -    | 6    | 13 ns  |
| power<br>dissipation<br>capacitance      | $C_{PD}$ | per package;<br>$V_I = \text{GND to } V_{CC}$ <sup>[3]</sup> | -                                     | 18   | -    | pF     |

Note:

[1]  $t_{pd}$  is the same as  $t_{PLH}$  and  $t_{PHL}$ .

[2]  $t_t$  is the same as  $t_{THL}$  and  $t_{TLH}$ .

[3]  $C_{PD}$  is used to determine the dynamic power dissipation ( $P_D$  in  $\mu\text{W}$ ).

$P_D = (C_{PD} \times V_{CC}^2 \times f_i \times N) + \Sigma(C_L \times V_{CC}^2 \times f_o)$  where:  $f_i$ =input frequency in MHz;

$f_o$ =output frequency in MHz;

$C_L$ =output load capacitance in pF;  $V_{CC}$ =supply voltage in V;

$N$ =number of inputs switching;  $\Sigma(C_L \times V_{CC}^2 \times f_o)$ =sum of outputs.

## AC Characteristics 2

( $T_{amb} = -40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ , voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter                                | Symbol   | Conditions                  | Min.                 | Typ. | Max. | Unit   |
|------------------------------------------|----------|-----------------------------|----------------------|------|------|--------|
| nA, nB, nC to nY<br>propagation<br>delay | $t_{pd}$ | see Figure 5 <sup>[1]</sup> | $V_{CC}=2.0\text{V}$ | -    | -    | 125 ns |
|                                          |          |                             | $V_{CC}=4.5\text{V}$ | -    | -    | 25 ns  |
|                                          |          |                             | $V_{CC}=6.0\text{V}$ | -    | -    | 21 ns  |
| transition time                          | $t_t$    | see Figure 5 <sup>[2]</sup> | $V_{CC}=2.0\text{V}$ | -    | -    | 95 ns  |
|                                          |          |                             | $V_{CC}=4.5\text{V}$ | -    | -    | 19 ns  |
|                                          |          |                             | $V_{CC}=6.0\text{V}$ | -    | -    | 16 ns  |

Note:

[1]  $t_{pd}$  is the same as  $t_{PLH}$  and  $t_{PHL}$ .

[2]  $t_t$  is the same as  $t_{THL}$  and  $t_{TLH}$ .

## 3.3.6、AC Characteristics 3

( $T_{amb} = -40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ , voltages are referenced to GND (ground=0V), unless otherwise specified.)

| Parameter                                | Symbol   | Conditions                  | Min.                 | Typ. | Max. | Unit   |
|------------------------------------------|----------|-----------------------------|----------------------|------|------|--------|
| nA, nB, nC to nY<br>propagation<br>delay | $t_{pd}$ | see Figure 5 <sup>[1]</sup> | $V_{CC}=2.0\text{V}$ | -    | -    | 150 ns |
|                                          |          |                             | $V_{CC}=4.5\text{V}$ | -    | -    | 30 ns  |
|                                          |          |                             | $V_{CC}=6.0\text{V}$ | -    | -    | 26 ns  |
| transition time                          | $t_t$    | see Figure 5 <sup>[2]</sup> | $V_{CC}=2.0\text{V}$ | -    | -    | 110 ns |
|                                          |          |                             | $V_{CC}=4.5\text{V}$ | -    | -    | 22 ns  |
|                                          |          |                             | $V_{CC}=6.0\text{V}$ | -    | -    | 19 ns  |

Note:

[1]  $t_{pd}$  is the same as  $t_{PLH}$  and  $t_{PHL}$ .

[2]  $t_t$  is the same as  $t_{THL}$  and  $t_{TLH}$ .

## Testing Circuit

### AC Testing Circuit

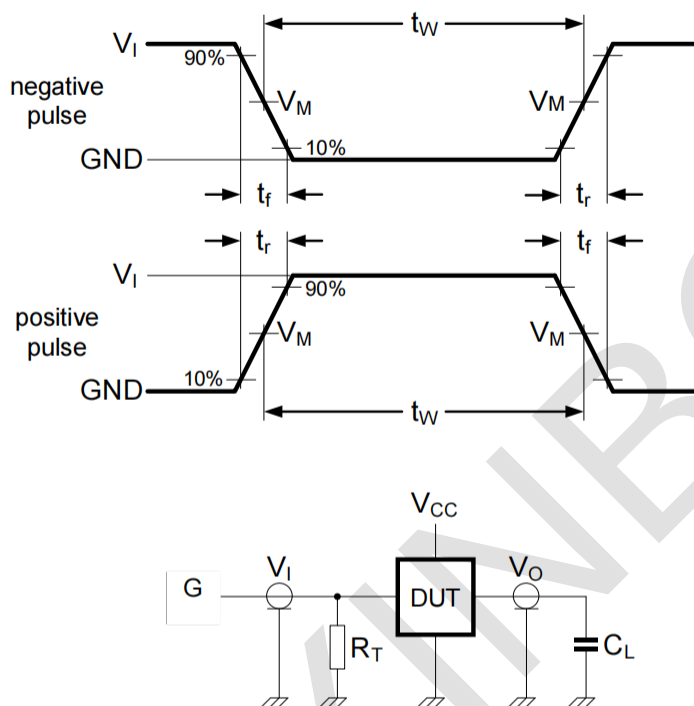


Figure 4. Test circuit for measuring switching times

Definitions for test circuit:

$C_L$ =load capacitance including jig and probe capacitance.

$R_T$ =termination resistance should be equal to the output impedance  $Z_o$  of the pulse generator.

## AC Testing Waveforms

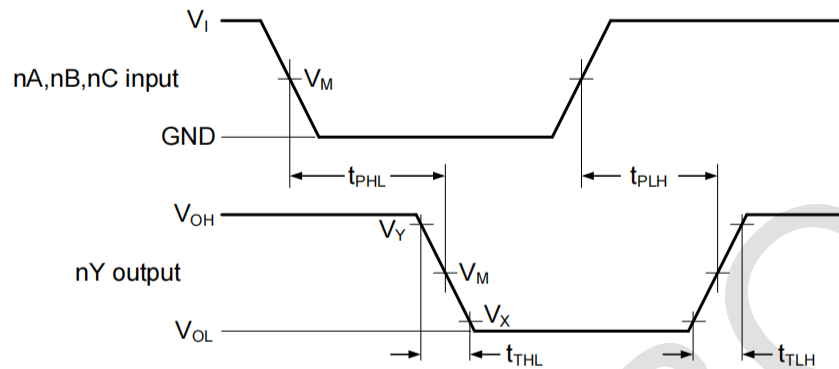


Figure 5. Input to output propagation delays

### Measurement Points

| Type     | Input               | Output              |                     |                     |
|----------|---------------------|---------------------|---------------------|---------------------|
|          | $V_M$               | $V_M$               | $V_X$               | $V_Y$               |
| SN74HC11 | $0.5 \times V_{CC}$ | $0.5 \times V_{CC}$ | $0.1 \times V_{CC}$ | $0.9 \times V_{CC}$ |

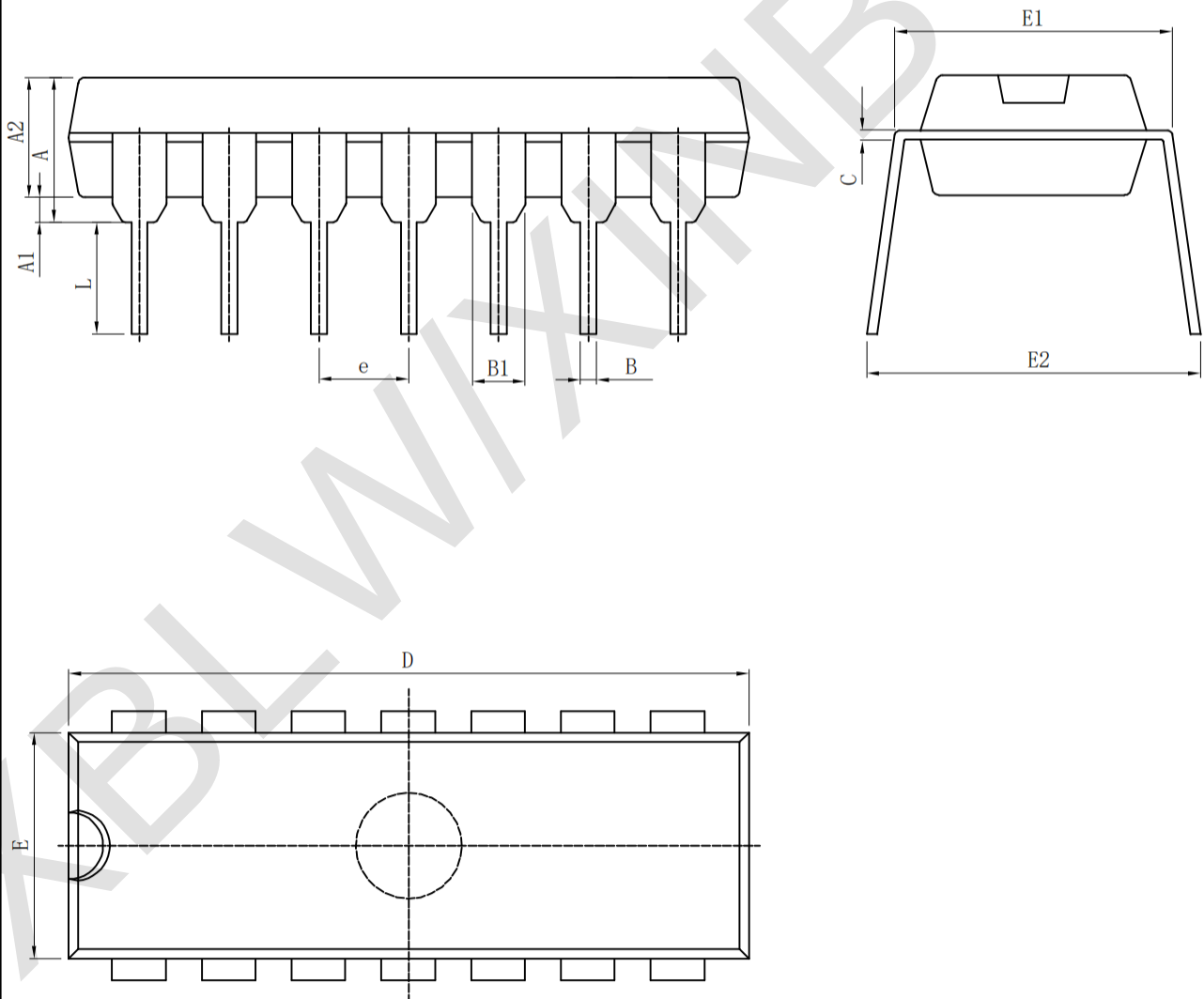
### Test Data

| Type     | Input    |            | Load       | Test               |
|----------|----------|------------|------------|--------------------|
|          | $V_I$    | $t_r, t_f$ | $C_L$      |                    |
| SN74HC11 | $V_{CC}$ | 6.0ns      | 15pF, 50pF | $t_{PLH}, t_{PHL}$ |

## Package Information

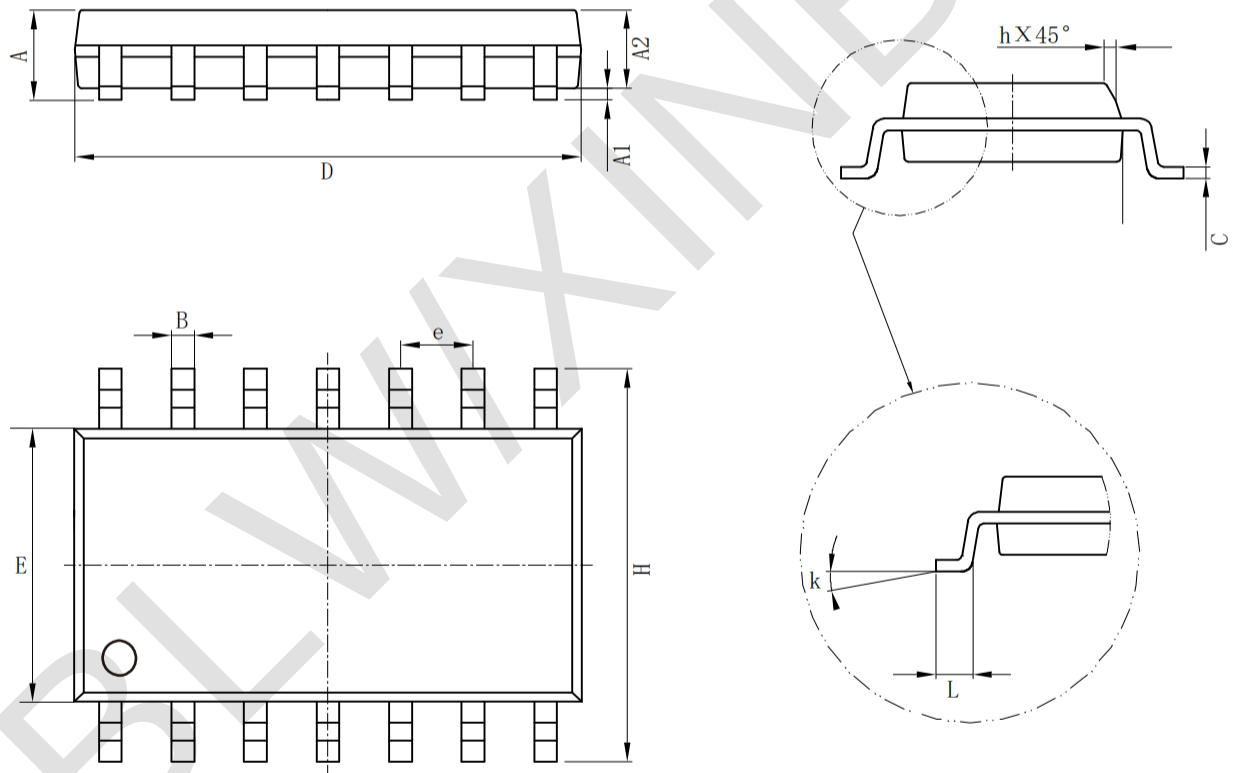
### · DIP-14

| Size<br>Symbol | Dimensions In Millimeters |          | Size<br>Symbol | Dimensions In Inches |          |
|----------------|---------------------------|----------|----------------|----------------------|----------|
|                | Min (mm)                  | Max (mm) |                | Min (in)             | Max (in) |
| A              | 3.710                     | 4.310    | A              | 0.146                | 0.170    |
| A1             | 0.510                     |          | A1             | 0.020                |          |
| A2             | 3.200                     | 3.600    | A2             | 0.126                | 0.142    |
| B              | 0.380                     | 0.570    | B              | 0.015                | 0.022    |
| B1             | 1.524 (BSC)               |          | B1             | 0.060 (BSC)          |          |
| C              | 0.204                     | 0.360    | C              | 0.008                | 0.014    |
| D              | 18.800                    | 19.200   | D              | 0.740                | 0.756    |
| E              | 6.200                     | 6.600    | E              | 0.244                | 0.260    |
| E1             | 7.320                     | 7.920    | E1             | 0.288                | 0.312    |
| e              | 2.540 (BSC)               |          | e              | 0.100 (BSC)          |          |
| L              | 3.000                     | 3.600    | L              | 0.118                | 0.142    |
| E2             | 8.400                     | 9.000    | E2             | 0.331                | 0.354    |



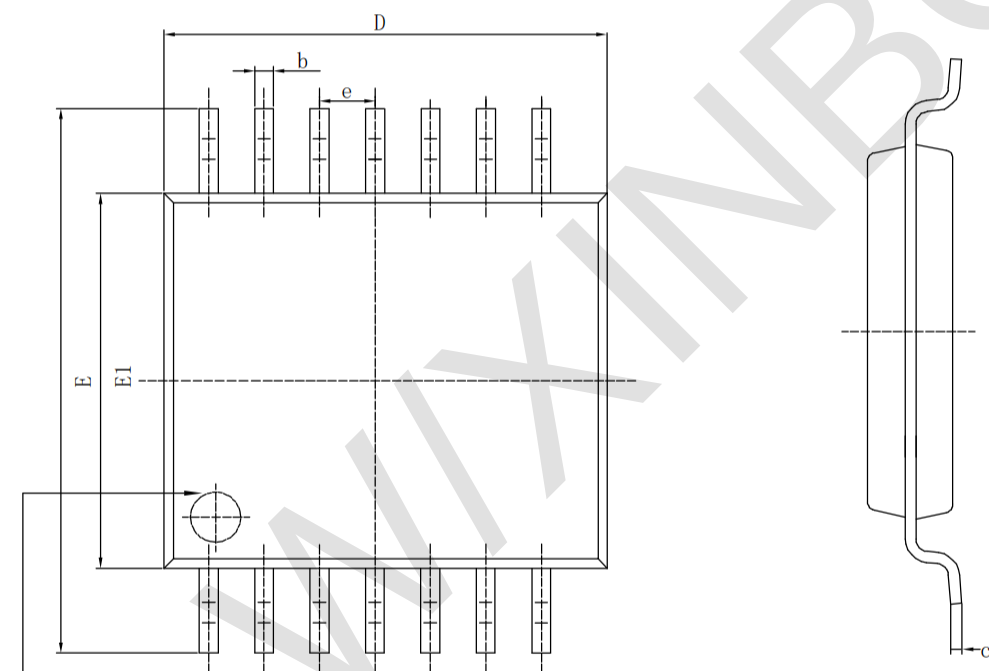
· SOP-14

| Symbol | Size | Dimensions In Millimeters |          | Symbol | Size | Dimensions In Inches |          |
|--------|------|---------------------------|----------|--------|------|----------------------|----------|
|        |      | Min( mm)                  | Max( mm) |        |      | Min( in)             | Max( in) |
| A      |      | 1.350                     | 1.750    | A      |      | 0.050                | 0.068    |
| A1     |      | 0.100                     | 0.250    | A1     |      | 0.004                | 0.009    |
| A2     |      | 1.100                     | 1.650    | A2     |      | 0.040                | 0.060    |
| B      |      | 0.330                     | 0.510    | B      |      | 0.010                | 0.020    |
| C      |      | 0.190                     | 0.250    | C      |      | 0.007                | 0.009    |
| D      |      | 8.550                     | 8.750    | D      |      | 0.330                | 0.340    |
| E      |      | 3.800                     | 4.000    | E      |      | 0.150                | 0.150    |
| e      |      | 1.27                      |          | e      |      | 0.05                 |          |
| H      |      | 5.800                     | 6.200    | H      |      | 0.220                | 0.240    |
| h      |      | 0.250                     | 0.500    | h      |      | 0.009                | 0.020    |
| L      |      | 0.400                     | 1.270    | L      |      | 0.015                | 0.050    |
| k      |      | 8° (max)                  |          | k      |      | 8° (max)             |          |

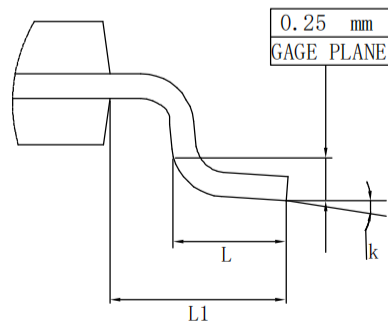
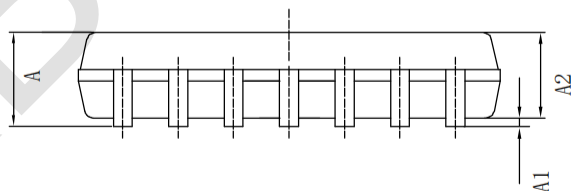


· TSSOP-14

| Symbol | Size | Dimensions In Millimeters |          | Symbol | Size | Dimensions In Inches |          |
|--------|------|---------------------------|----------|--------|------|----------------------|----------|
|        |      | Min (mm)                  | Max (mm) |        |      | Min (in)             | Max (in) |
| A      |      |                           | 1.200    | A      |      |                      | 0.047    |
| A1     |      | 0.050                     | 0.150    | A1     |      | 0.002                | 0.006    |
| A2     |      | 0.800                     | 1.050    | A2     |      | 0.031                | 0.041    |
| b      |      | 0.190                     | 0.300    | b      |      | 0.007                | 0.012    |
| c      |      | 0.090                     | 0.200    | c      |      | 0.004                | 0.0089   |
| D      |      | 4.900                     | 5.100    | D      |      | 0.193                | 0.201    |
| E      |      | 6.200                     | 6.600    | E      |      | 0.244                | 0.260    |
| E1     |      | 4.300                     | 4.500    | E1     |      | 0.169                | 0.176    |
| e      |      | 0.65                      |          | e      |      | 0.0256               |          |
| L      |      | 0.450                     | 0.750    | L      |      | 0.018                | 0.030    |
| L1     |      | 1.00                      |          | L1     |      | 0.039                |          |
| k      |      | 0°                        | 8°       | k      |      | 0°                   | 8°       |



PIN #1 IDENT.



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